



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

POSITIVE RECALL
EFFECTIVE 12/10/18
RELEASED

AUTH 4P

DATE 12-12-12

D350-748-101

Job Sheet 184479



Part No: D350-748-101

Job Qty: 1 ea

Part Name: FWD Crosstube AS350 / AS350



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/10/18

Job Tracking No:

Due Date: 10/12/18

Created By: Jesse White

Type: SOLD

Description:

Note: DWG REV H IPP Rev:A New Issue 06-07-05 JLM IPP Rev:B Update qty of MS21042L5 06-09-12 KJ VERIFY BY:DD IPP Rev:C Rev B 07-11-15 DD IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD IPP Rev:E 08-06-24 revD as per dwg DD verified by:EC IPP Rev:F 10.08.04 added QSI010 4.3 DD verf:EC IPP REV:G ADD UNDER BEND COMMENT 12-05-28 JLM IPP REV:H 12.11.05 as per dwg D350-748-141G DD verf:JLM IPP REV:I 15.03.19 as per dwg D350-748-141revH dd verf:jlm

Ship Via:

Bill of Materials

POSITIVE RECALL
EFFECTIVE
RELEASED
DATE
WITH

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		10/12/18	0.00	0.00	Start Up Crosstubes-1		DPZ
110	CNC Bend Skid tubes	1 pcs		10/12/18	0.00	2.86	CNC Bend Skid tube		DPZ
120	Crosstubes	1 pcs		10/12/18	0.00	1.94	Crosstubes-2		DPZ
125	Outsource	1 pcs		10/12/18			MEI001-VC	3	DPZ
126	Packaging	1 pcs		10/12/18	0.00	0.00	Packaging2		DPZ
127	QC	1 pcs		10/12/18	0.00	0.00	QC15		DPZ
128	Crosstubes	1 pcs		10/12/18	0.00	1.94	Crosstubes-2		DPZ
130	Crosstubes	1 pcs		10/12/18	0.00	1.94	Crosstubes-2		DPZ
140	QC	1 pcs		10/12/18	0.00	0.00	QC5		DPZ
150	Outsource	1 pcs		10/12/18			CAD002-VC	8	DPZ
160	Packaging	1 pcs		10/12/18	0.00	0.00	Packaging2		DPZ
170	QC	1 pcs		10/12/18	0.00	0.00	QC6		DPZ
174	Outsource	1 pcs		10/12/18			SKY002-VC	5	DPZ
176	Packaging	1 pcs		10/12/18	0.00	0.00	Packaging2		DPZ
178	QC	1 pcs		10/12/18	0.00	0.00	QC5		DPZ
180	SprayPaint	1 pcs		10/12/18	0.00	0.97	Spray Paint		DPZ
190	QC	1 pcs		10/12/18	0.00	0.00	QC14		DPZ
200	Crosstubes	1 pcs		10/12/18	0.00	1.94	Crosstubes-2		DPZ
210	QC	1 pcs		10/12/18	0.00	0.00	QC5		DPZ
220	Packaging	1 pcs		10/12/18	0.00	0.00	Packaging1-3		DPZ
230	QC	1 pcs		10/12/18	0.00	0.00	QC4		DPZ
240	Packaging	1 pcs		10/12/18	0.00	0.00	Packaging3-1		DPZ
245	DC	1 pcs		10/12/18	0.00	0.00	DC		DPZ
250	QC21-FG	1 Ea		10/12/18	0.00	0.00	QC21		DPZ

Part Op 110 - Bend tube as per Dwg D350-748-141 using CNC bender program D350F and Folio FT
 Descriptions: .225" PER SIDE****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****
 120 - ****VERIFY CROSSTUBE DIMENSIONS AS PER DWG****
 125 - ISSUE P/O TO METCOR: 41305 AFTER BENDING: STRESS RELIEF AT 650° F ± 25° F FOR A MINIMUM OF 2 HRS AIR COOL TO AMBIENT TEMPERATURE note: crosstube made from 4130 seamless steel tube DETAIL C OF C REQUIRED
 127 - ***MARK CUT LINES***
 128 - CUT TUBE AT HEIGHT ON FAI SHEET VERF HEIGHT 23.25 BY QC 15 LEVEL INSPECTOR
 VERF TWIST 0.049 BY QC15 LEVEL INSPECTOR
 130 - 2- Drill Tube as per Dwg D350-748-141 Using DT8876 A,B & C Drill Jigs, Set-up drill table as per QSI 010 3- Deburr 4- Engrave Part # and Batch # as per Dwg D350-748-141 5- Remove all marks from tube within limits of D350-748-141 6- Apply a light coat of LPS3 on the interior of tube Batch:
 140 - CHECK 10 DEG HOLES WITH DT8876E (EUROCOPTER CLAMP)
 150 - Issue P/O: 41324 Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 deegree for 8 hrs, Chromate Treat C of C req'd
 160 - Ensure certificate of conformity is attached
 174 - ISSUE P/O TO SKYSERVICE:
 180 - 1-Prime inside and out crosstube as per QSI 005 4.2 2-Paint Outside of Tube as per Dart QSI 005 4.2
 190 - Then,Wrap in plastic bag to protect from scratches Prime 138876 Paint 138978
 200 - INSTALL GROUND WIRE INSERT, THEN INSERT SCREW AND WASHER 2-Install supports with Proseal 890 per D350-748-141 and QSI 015 EXP: 3-Install supports clamps Using Dt8876 as per Dwg D350-748-141,Torque to 60-80 IN-LBS. ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***
 240 - Identify and pack for shipping as per PPP D350-748-101
 245 - Photocopy bluefile & type labels per PPPD350-748-101 CHG003

Pro Seal BATCH # 5096394 EX 3/19
 START 18/12/03 FINISH 18/12/06

1875

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1875

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D350-748-141TRN	Crosstube Turning Detail	1 Ea (1 ea)	90-Start up Operation	
ALS4-1032-225	Rivnut	1 Ea (1 ea)	200-Crosstubes	
D3502-1	Support	2 Ea (2 ea)	200-Crosstubes	
D5123-7	Clamp Cushion	2 Ea (2 ea)	200-Crosstubes	
MS21920-20	Clamp	2 Ea (2 ea)	200-Crosstubes	
MS27039-1-10	Screw	1 Ea (1 ea)	200-Crosstubes	
NAS1149D0363J	Washer	1 Ea (1 ea)	200-Crosstubes	
AN4-41A	Bolt	8 Ea (8 ea)	220-Packaging	5058981-1
AN4-6A	Bolt	16 Ea (16 ea)	220-Packaging	5053945
AN5-32A	Bolt	4 Ea (4 ea)	220-Packaging	5058983-1
D3500-1	Saddle	4 Ea (4 ea)	220-Packaging	5105264
D3501-1	Bushing	16 Ea (16 ea)	220-Packaging	8124356
MS21042L4	Nut	24 Ea (24 ea)	220-Packaging	8112434
MS21042L5	Nut	4 Ea (4 ea)	220-Packaging	5093592
NAS1149D0463J	Washer	32 Ea (32 ea)	220-Packaging	5092780
NAS1149D0563J	Washer	8 Ea (8 ea)	220-Packaging	5050053

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D350-748-141TRN	1	6	0
200-Crosstubes	ALS4-1032-225	1	1,843	0
	D3502-1	2	38	0
	D5123-7	2	301	0
	MS21920-20	2	200	0
	MS27039-1-10	1	204	0
	NAS1149D0363J	1	1,829	0
220-Packaging	AN4-41A	8	567	0
	AN4-6A	16	1,198	0
	AN5-32A	4	354	0
	D3500-1	4	103	0
	D3501-1	16	547	0
	MS21042L4	24	4,639	0
	MS21042L5	4	733	0
	NAS1149D0463J	32	5,614	0
	NAS1149D0563J	8	1,414	0

Part Specifications

Specifications could not be found.

Plex 10/10/18 12:55 PM dart.white.jesse

DART
AEROSPACE

Container No.: S117081



Part: D350-748-101

Job No: 184479

Serial No/Batch: S117081

Revision:

Inspector:

Exp Date:

Instructions: TL STC SH06-27 Issue 2 of 2 FAA STC SR02359NY 11/03/04, F

 1270 Abernethy Street
 Hawkesbury, ON K64 1K7
 CANADA
 TEL.: 1 613 632-5200
 Email: sales@dartaero.com
 www.dartaerospace.com

Item	Qty -141	Part Number	Description
1	X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
2	1	D6015-125	CROSSTUBE (OR D6017-115)
3	2	D3502-1	SUPPORT
4	2	D5123-7	CLAMP CUSHION
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (OR MS21920-21/-22, PER DART SPEC. M-MS21920-20/-21/-22)
8	1	MS27039-1-10	SCREW
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6017-115
FINISHED LENGTH AFTER TURNING = 112.270±0.06 (AFTER BENDING/TRIMMING = 110.27 REF)
- 2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCE: PER DART QSI 018 UNLESS OTHERWISE NOTED.
WALL THICKNESS ECCENTRICITY PER DART QSI 038 7.2
MIN. ALLOWABLE WALL IS -0.020 FROM NOMINAL
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-141" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 30.45 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.

TURNING

- 10) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.

- 11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS2759/1E AFTER TURNING. ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.

BENDING

- 12) ALL DIMENSIONS FOR BENT TUBE ARE POST STRESS RELIEF
- 13) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES PER SIDE. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. ON TOP HALF OF BEND, AND 8% ON BOTTOM HALF OF BEND.
- 14) MAX AMPLITUDE OF RIBBLING ALONG BENT PORTION OF THE TUBE IS 0.030 (ZN A1-3)
- 15) AFTER BENDING, STRESS RELIEVE TUBE AT 650°F ±10.25°F FOR A MINIMUM OF 2 HRS AND ALLOW TO COOL TO AMBIENT TEMPERATURE (REF AMS2759/1E).
- 16) MAX TWIST AFTER STRESS RELIEF: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.38 (ZN C1-3).

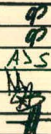
ASSEMBLY

- 17) TO INSTALL D3502-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.02" TO 0.05" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 18) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

RELEASED

2015 MAR 18

9 EN 15-547

H	D5123-7 WAS D3595-063-395, MS21920-20 WAS -22, ALLOWABLE CRUSHING NOW 8% WAS 7%	CP	15.02.25
G	RMV ABRASION STRIP, SUPPORT NOW W/ PROSEAL & CUSHION, ADD STRESS RELIEF, LONGER CUFF, NOW TRIMD AFTER BEND, ADD WALL DIMS & UPDATE TOL	CP	12.09.12
F	ADD HRC TEST OPTION (B8-1) PER PAR 09-040, ADD TWIST LIMIT (A8-1, C1-3), ADD D6015-125 OPTION (C8-1), STOCK DIM NOW MACHINED (D1-4)	CP	10.11.23
E	REVISE GENERAL NOTES; UPDATE TO CURRENT ADD STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); TOLERANCES (ZN C6-3, D1-3)	RF	09.09.30
D	MAG. PARTICLE AND CAD PLATE AS MFD.	CP	08.10.31
C	ADD CAD PLATING	CP	08.08.14
B	ADD D6017-115 & PRIME AND PAINT	CP	08.08.30
A	NEW ISSUE	CP	08.03.31
REV.	DESCRIPTION	BY	DATE
DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. H
MFG. APPR.		D350-748-141	SHEET 1 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE		15.02.25	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT THE WRITTEN PERMISSION FROM DART AEROSPACE LTD.

8 7 6 5 4 3 2 1

17 18
 D3502-1 SUPPORT
 MS21920-20 CLAMP (OR -21/-22)
 D5123-7 CLAMP CUSHION
 2 PL

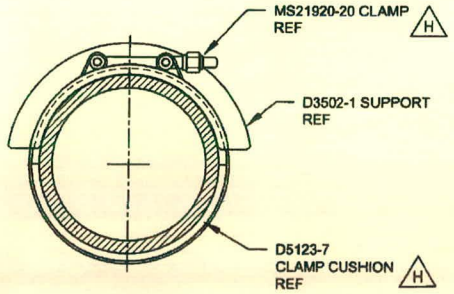


A7-2
 A
 A

D350-748-141
 BENT TUBE

INSTALL AFTER FINISH, THIS SIDE ONLY:
 AELS-1032-225 INSERT
 NAS1149D0363J WASHER
 MS27039-1-10 SCREW

**D350-748-141
 ASSEMBLY DETAIL**

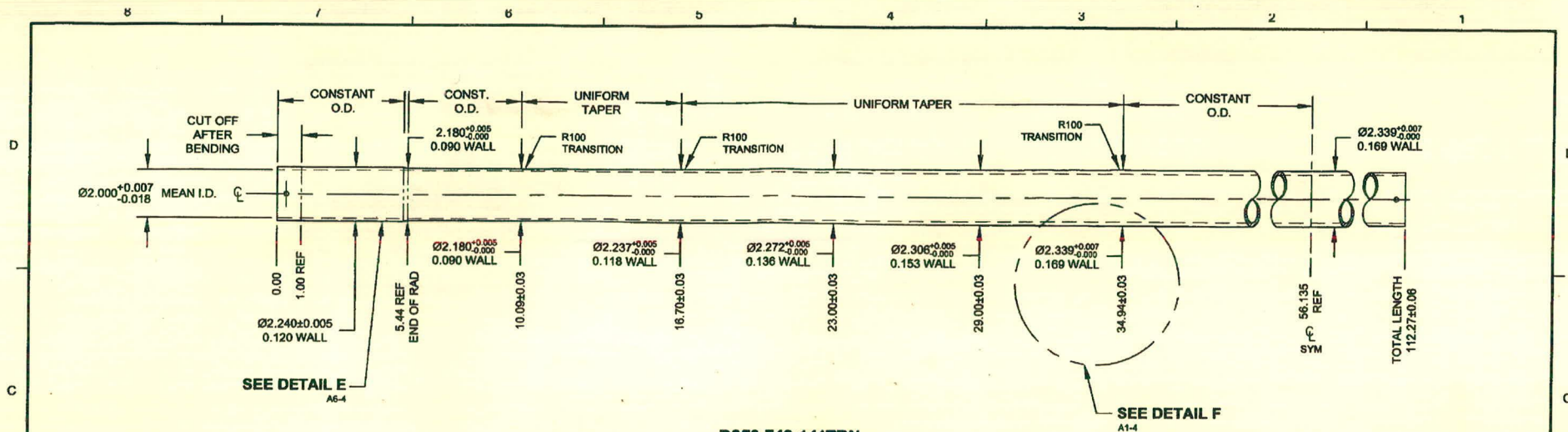


SECTION A-A D4-2
 SCALE 6X

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 2015 MAR 18

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED	AS	DRAWING NO.	REV. H
MFG. APPR.		D350-748-141	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (AS 350/355 HI FWD)	NTS
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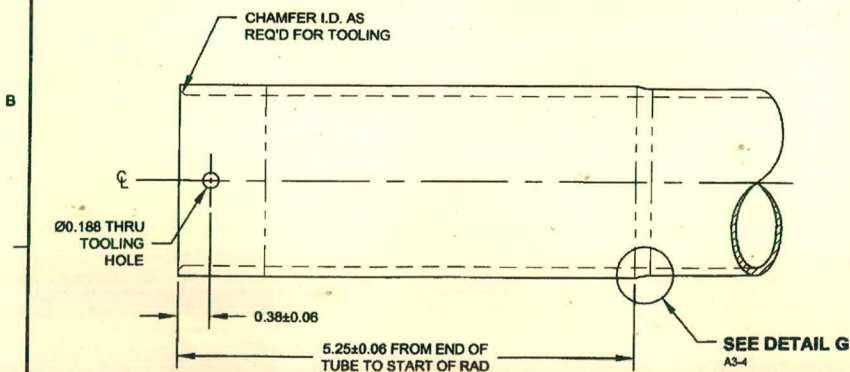
8 7 6 5 4 3 2 1



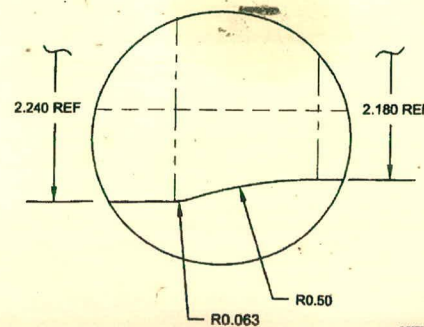
**D350-748-141TRN
TURNING DETAIL**

RELEASED

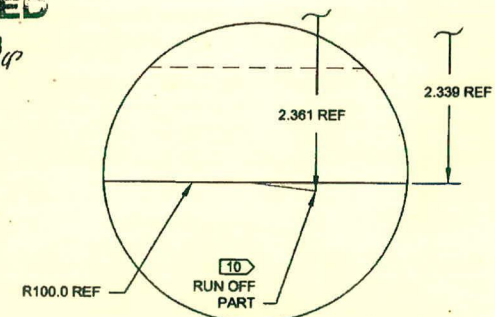
2015 MAR 18



**DETAIL E:
CROSSTUBE CUFF** C7-4
SCALE 3X



**DETAIL G:
CUFF TRANSITION** A5-4
NOT TO SCALE



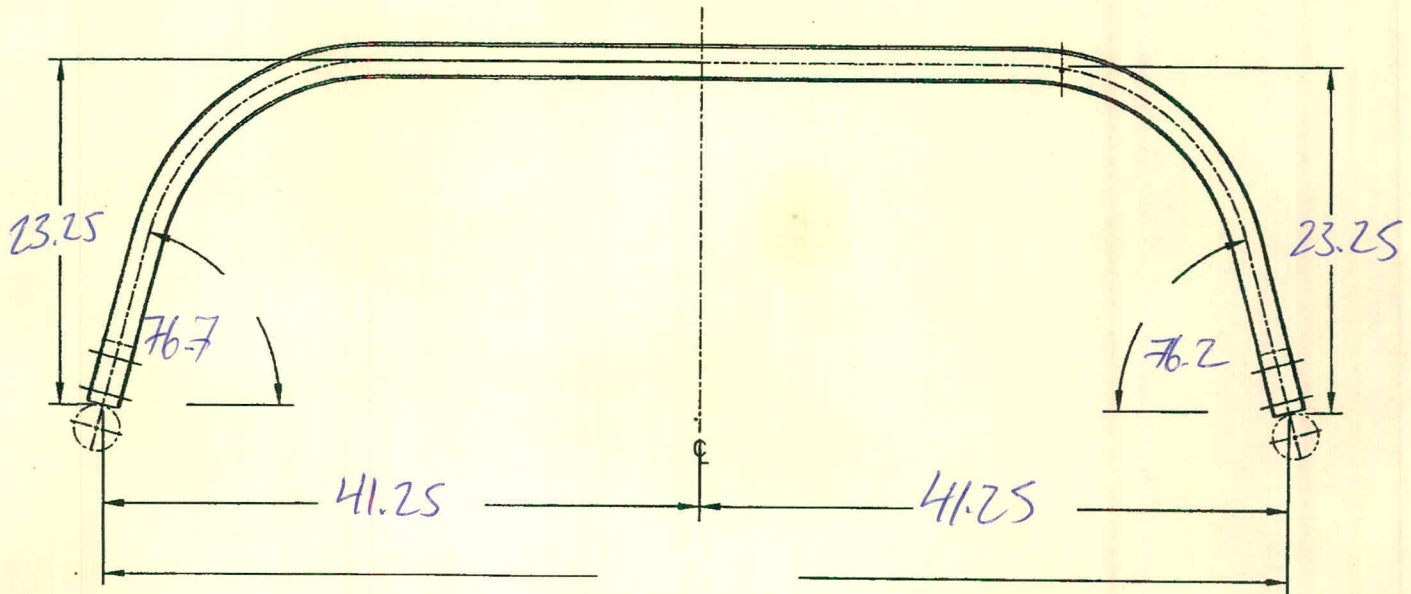
**DETAIL F:
TOOL RUN-OFF** C3-4
NOT TO SCALE

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED	AS	DRAWING NO. D350-748-141	REV. H
MFG. APPR.			SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (AS 350/355 HI FWD)	NTS
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Before De-Steel

DART AEROSPACE LTD		Work Order:	
Description: Crosstube High Fwd (AS350/355)		Part Number:	D350-748-101
Inspection Dwg: D350-748-141 Rev: H			Page 1 of 1

Required Dimension	Min	Max
Height	23.00	23.50
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.55	82.05
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



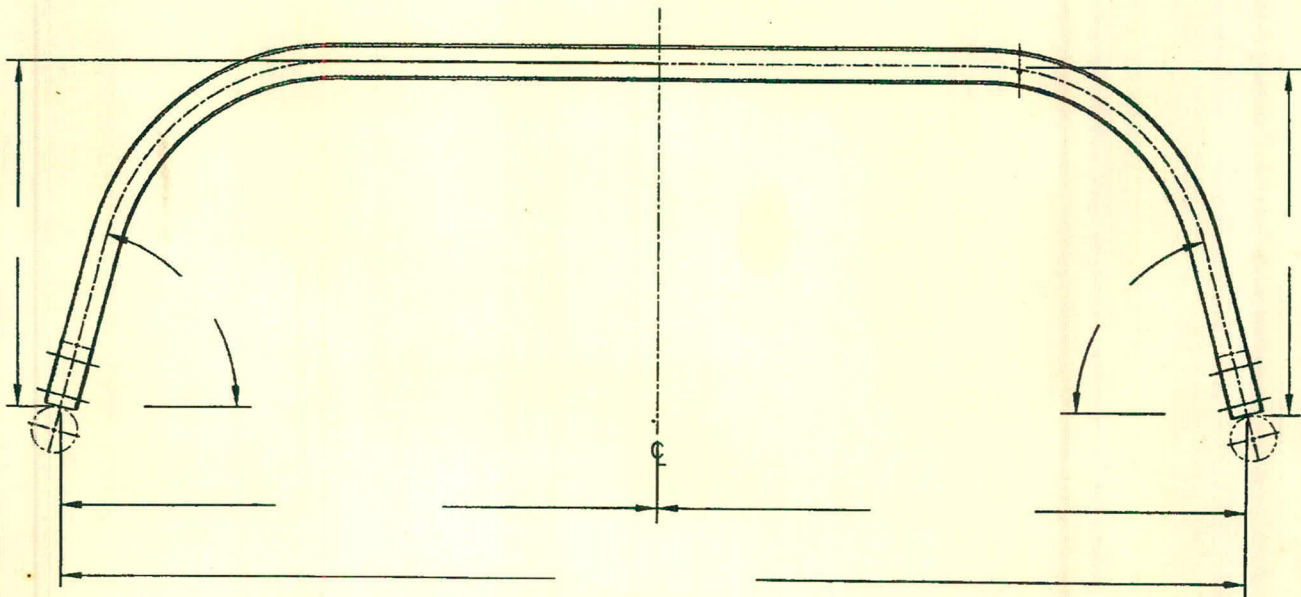
	Side A	Side B
Bending Passes		
Crushing		
Comments		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	
C	11.11.07	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing & twist dimensions	KJ	
E	13.02.27	Dwg Rev updated	KJ	
F	14.02.13	Crushing & twist dimensions revised	KJ	
G	14.11.10	Height dimension revised	KJ	
H	15.04.14	Dwg Rev updated	KJ	
I	15.09.09	Crushing dimension revised	KJ	

DART AEROSPACE LTD		Work Order:	
Description: Crosstube High Fwd (AS350/355)		Part Number:	D350-748-101
Inspection Dwg: D350-748-141 Rev: H		Page 1 of 1	

Required Dimension	Min	Max
Height	23.00	23.50
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.55	82.05
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



	Side A	Side B
Bending Passes		
Crushing		
Comments		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	
C	11.11.07	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing & twist dimensions	KJ	
E	13.02.27	Dwg Rev updated	KJ	
F	14.02.13	Crushing & twist dimensions revised	KJ	
G	14.11.10	Height dimension revised	KJ	
H	15.04.14	Dwg Rev updated	KJ	
I	15.09.09	Crushing dimension revised	KJ	



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO041305**

Supplier: MEI001-VC
Metcor Inc.
560 Boul. Arthur Sauve
Saint-Eustache
QC
J7R 5A8 Canada
Phone: 450 473 1884
Fax: 450 491 5498

PO No: PO041305
PO Date: 10/10/18
Due Date: 10/11/18
Purchase Order
Revision:
Revision Date:
Ship-To Contact: Phone:

E-MAILED

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	184478	D350-748-101	FWD Crosstube AS350 / AS355 ISSUE P/O TO METCOR: AFTER BENDING: STRESS RELIEF AT 650° F ± 25° F FOR A MINIMUM OF 2 HRS AIR COOL TO AMBIENT TEMPERATURE note: crosstube made from 4130 seamless steel tube DETAIL C OF C REQUIRED	Firmed	-	10/11/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
	184479		1 X OCT 12 2018	Firmed	-	10/11/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
	184476		1 X OCT 12 2018	Firmed	-	10/11/18	1 pcs	0 pcs	1 pcs	\$205.00/pcs	\$205.00
Sub Total:							3	0	3		\$615.00

Grand Total: \$615.00

DAS
38
9-89

CL



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO041305

Order Notes

Procurement Quality Clauses

A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 10/10/18 2:33 PM dart.lavoie.chantal

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Reçu de livraison

Delivery Receipt

BON DE TRAVAIL	EXPÉDITEUR	BON D'EXPÉDITION
Order	Shipper ID	Shipper
331059	1	131541

EXPÉDITION COMPLÈTE / Shipped Complete

CLIENT /Customer 215

DART AEROSPACE

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053



LIVRÉ À /Shipped To

DART AEROSPACE

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

COMMANDE DU CLIENT	BON DE LIVRAISON DU CLIENT	TYPE DE MATÉRIEL	DATE DE LA COMMANDE	TRANSPORTEUR
Customer PO	Customer Shipper No.	Material Type	Order Date	Carrier
PO041305		Steel	2018/10/10	client

QUANTITÉ	No. PIÈCE	NOM DE LA PIÈCE	DESCRIPTION DE LA PIÈCE	POIDS
Quantity	Part No.	Part Name	Part Description	Weight

3 D350-748-101
CROSSTUBE
(3) D350-748-101
JOB 184478,184479,184476,
1 NIL

TYPE DE CONTENEUR	# DE CONTENEURS	COMMENTAIRES CONTENEUR
Container Type	# Of Containers	Container Comments
NIL	1	

CERTIFICAT

EMPAQUETAGE Packing	
------------------------	--

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 3

POIDS EXPÉDIÉ / Weight Shipped : 93,00

QUANTITÉ RESTANTE / Quantity Remaining : 0

POIDS RESTANT / Weight Remaining : 0,00

APPROUVÉ
ACCE

CERTIFICAT

QUANTITÉ EXPÉDIÉE / Quantity Shipped : 3

POIDS EXPÉDIÉ / Weight Shipped : 93,00

Signature:

Date:

EXPÉDIÉ LE / Shipped On : 2018/10/11

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
331059	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

1

COMMANDE DU CLIENT customer po	CLASSIFICATION PIECE part classification	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
PO041305	N/A	Steel		

SPÉCIFICATIONS DU PROCÉDÉ processing specifications

STRESS REL

SAE AMS 2759/1 REV.F

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
Visual			

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
3	93	D350-748-101 CROSSTUBE (3) D350-748-101 JOB 184478, 184479, 184476, 1 NIL

COMMENTAIRES / comments

APPROUVÉ par / Approved by:

DATE: 2018-10-11

Pierre Plé
Chief Inspector

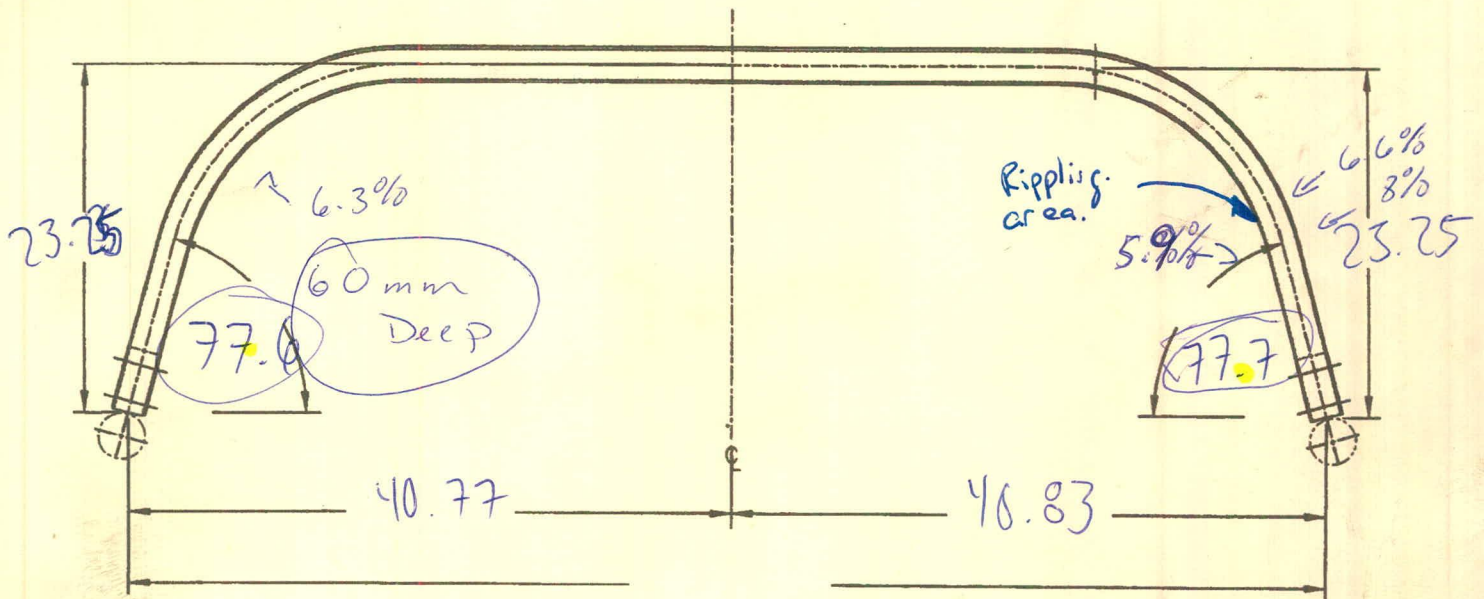


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9-89

APPROUVÉ

DART AEROSPACE LTD		Work Order: 184 479
Description: Crosstube High Fwd (AS350/355)		Part Number: D350-748-101
Inspection Dwg: D350-748-141 Rev: H		Page 1 of 1

Required Dimension	Min	Max
Height	23.00	23.50
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.55	82.05
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



	Side A	Side B
Bending Passes		
Crushing	6.6%	6.3%
Comments		
Rippling is 60 mm Deep on one side		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	
C	11.11.07	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing & twist dimensions	KJ	
E	13.02.27	Dwg Rev updated	KJ	
F	14.02.13	Crushing & twist dimensions revised	KJ	
G	14.11.10	Height dimension revised	KJ	
H	15.04.14	Dwg Rev updated	KJ	
I	15.09.09	Crushing dimension revised	KJ	

PART AEROPACE LTD

Work Order

Part Number: 0380-148-101

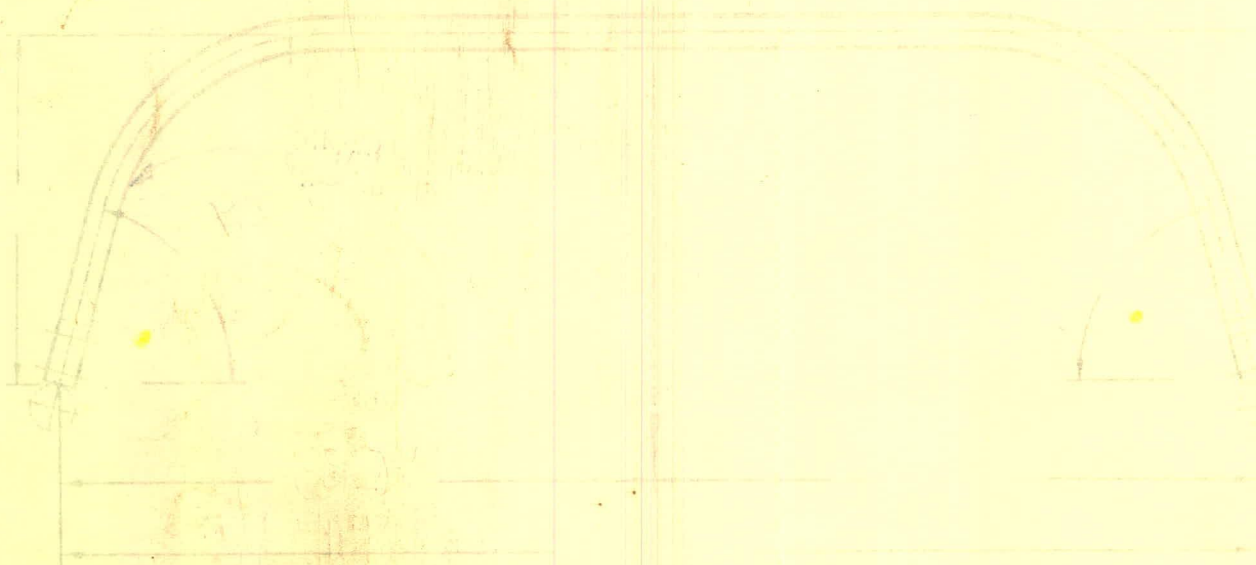
Description: CUSHING HIGH (A350055)

Page 1 of 1

Rev: 1

Description: CUSHING HIGH (A350055)

Part Number	Min	Max
0380-148-101	23.00	23.50
0380-148-101	40.75	41.00
0380-148-101	75	75
0380-148-101	81.50	82.00
0380-148-101	1	1
0380-148-101	8%	8%
0380-148-101	0.38	0.38



Side B

Side A

Cushing
Passes

Comments

Costs
Date

Rev	Date	Change	Revised by	Approved
1	01-02-00	New Item	KLJ	
2	10-08-00	Dwg Rev updated	KLJ	
3	14-11-01	Dwg Rev updated	KLJ	
4	15-04-10	Added bearing (cushion) & twist dimensions	KLJ	
5	13-02-01	Dwg Rev updated	KLJ	
6	14-02-01	Cushion & twist dimensions revised	KLJ	
7	14-11-01	Twist dimension revised	KLJ	
8	15-04-04	Dwg Rev updated	KLJ	
9	15-04-00	Cushion dimension revised	KLJ	

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: <u>184479</u> Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier Quality ☐			
Date : <u>18/10/15</u>	Sequence #: <u>127</u>	QTY Affected : <u>①</u>		MRB (QSI042) <u>1 MSP</u> <u>12</u> <u>18/10/15</u>	
Description Work Order Deviation Bend angles are over tolerance. Rippling is over tolerance. Diameter at max crushing = 1.982".		Disposition Acceptable. Will be validated by Eng. testing. ⇒ Acceptable based on Eng testing of S117100 on 18/10/30. <u>18/10/30</u>		Completed By <u>18/10/15</u> Lead hand / Supervisor <u>18-12-13</u> QC / QA Coordinator <u>18-12-13</u>	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☒ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☒ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled		FAULT CATEGORY ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO041374**

Supplier: CAD002-VC
Cadorath Coating
2150 Logan Ave.
Winnipeg
MB
R2R 0J2 Canada
Phone: 204 633 9420
Fax: 204 633 8033

PO No: PO041374
PO Date: 10/18/18
Due Date: 10/31/18
Purchase Order Revision:
Revision Date:
Ship-To Contact: Phone:

E-MAILED
OCT 19 2018

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pynt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	184476	D350-748-101	FWD Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 Issue P/O: Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 degree for 8 hrs, Chromate Treat C of C req'd serial # S117106	Firmed	-	10/31/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	184479		serial # S117081	Firmed		10/31/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	184478		serial # S117100	Firmed		10/31/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
Sub Total:							3	0	3		\$2,415.00

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Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO041374**

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
2	184480	D350-748-201	Aft Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 Issue P/O: Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 defree for 8 hrs, Chromate Treat C of C req'd serial # S117528	Firmed	-	10/31/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
	184483		serial # S117537	Firmed		10/31/18	1 pcs	0 pcs	1 pcs	\$805.00/pcs	\$805.00
Sub Total:							2	0	2		\$1,610.00
Grand Total:										\$4,025.00	

Order Notes

Procurement Quality Clauses
A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 10/18/18 10:24 AM dart.lavoie.chantal

Packing Slip



Cadorth Coating

2150 Logan Avenue, Winnipeg, Manitoba R2R-0J2

Phone: (204) 633-9420 Fax: (204) 633-8033

INVOICE NUMBER:

S98011

Sold To:

Dart Aerospace Ltd.
1270 Aberdeen St.

Hawksbury, ON K6A 1K7

ShipTo:

Net 2% Interest Per Month charged on Overdue Accounts.

Any claims for shortages, overcharges, or damaged goods must be made within seven (7) days from receipt of goods.

Customer Order #: DateReceived:

PO041374

Oct-19-2018

Terms:

NET 30 DAYS

G.S.T. #:

10071 6547 RT0001

Ship Via:

Ship Date:

Oct-25-2018

Item # Qty P/N & Description

1	1 EA	CROSSTUBE ✓ P/N d350-748-101 ✓	S/N S117106 ✓ W/O 187621
2	1 EA	CROSSTUBE ✓ P/N d350-748-101 ✓	S/N S117081 ✓ W/O 187622
3	1 EA	CROSSTUBE ✓ P/N d350-748-101 ✓	S/N S117100 ✓ W/O 187623
4	1 EA	CROSSTUBE ✓ P/N D350-748-201 ✓	S/N S117528 ✓ W/O 187624
5	1 EA	CROSSTUBE ✓ P/N D350-748-201 ✓	S/N S117537 ✓ W/O 187625

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Oct-25-2018

CONSIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 187622

INVOICE #: 98011

**CONTRACT OR
PURCHASE ORDER #** PO041374 ✓

DESCRIPTION: CROSSTUBE

QTY

1 ✓

P/N # d350-748-101 ✓

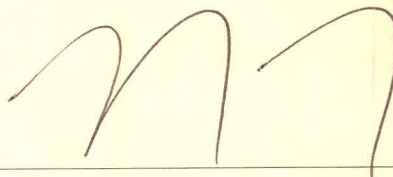
S/N # S117081 ✓

STRESS RELIEF BAKE HEAT CHART # 18-980. MPI IAW ASTM-E-1444. CADMIUM PLATE IAW AMS-QQ-P-416C TYPE 2 YELLOW CLASS 1. FINAL MPI IAW ASTM-E-1444. EMBRITTLE RELIEF BAKE HEAT CHART # 18-990.

CERTIFICATE: I certify that the items indicated here on have been inspected and tested and conform to all specifications and requirements detailed on the contract or purchase order.

DAS
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9-89

Approved Inspector:





Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO041475**

Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

PO No: PO041475
PO Date: 10/26/18
Due Date: 10/30/18
Purchase Order
Revision:
Revision Date:
Ship-To Contact: Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pynt Terms: Net 30
Freight Terms:
Special Comments:

Items											
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	184178	D4464-041	Fuel Tank Assembly : Various STC's ISSUE P/O : LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2	Firmed	-	10/30/18	1 pcs	0 pcs	1 pcs	\$156.00/pcs	\$156.00
						1X OCT 30 2018					
2	184697	D212-664-101	Fwd Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	10/30/18	1 pcs	0 pcs	1 pcs	\$75.00/pcs	\$75.00
						1X OCT 30 2018					
	184695			Firmed	-	10/30/18	1 pcs	0 pcs	1 pcs	\$75.00/pcs	\$75.00
						Sub Total:	2	0	2		\$150.00
3	183769	D212-664-201	Aft Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 ***WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Issue P/O: LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2	Firmed	-	10/30/18	1 pcs	0 pcs	1 pcs	\$156.00/pcs	\$156.00
						1X OCT 30 2018					
	183770			Firmed	-	10/30/18	1 pcs	0 pcs	1 pcs	\$156.00/pcs	\$156.00
						1X OCT 30 2018					



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO041475**

Items											
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
Sub Total:							2	0	2		\$312.00
4	184479	D350-748-101	FWD Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 Issue P/O: _____ Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 defree for 8 hrs, Chromate Treat C of C req'd ISSUE P/O TO SKYSERVICE: _____	Firmed -		10/30/18	1 pcs	0 pcs	1 pcs	\$122.7272/pcs	\$122.73
	184476			Firmed -		10/30/18	1 pcs	0 pcs	1 pcs	\$122.7272/pcs	\$122.73
	184478			Firmed -		10/30/18	1 pcs	0 pcs	1 pcs	\$122.7272/pcs	\$122.73
Sub Total:							3	0	3		\$368.18
5	184480	D350-748-201	Aft Crosstube AS350 / AS355 : TC STC SH06-27 Issue 2, FAA STC SR02359NY 11/03/04, EASA STC EASA.10016903 Revision 2 10/09/03, BRAZIL 2009S04-04 09/04/06 ISSUE P/O TO SKYSERVICE: _____	Firmed -		10/30/18	1 pcs	0 pcs	1 pcs	\$122.7272/pcs	\$122.73
	184483			Firmed -		10/30/18	1 pcs	0 pcs	1 pcs	\$122.7272/pcs	\$122.73
Sub Total:							2	0	2		\$245.45
Grand Total:										\$1,231.64	



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO041475

Order Notes

Procurement Quality Clauses

A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 10/29/18 8:56 AM dart.tsimiklis.chrisoula

**skyservice****Work Order Traveler**

Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

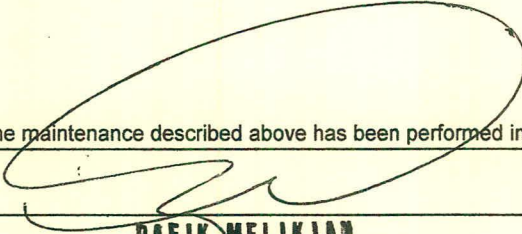
WO #: MWO37958	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO041475
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:**CARRY OUT NDT ON:**

- 1 FUEL TANK ASSY , P/N# D4464-041 , J/S# 184178 ✓
- 2 FWD CROSSTUBES , P/N# D212-664-101 , J/S# 184695 , 184697 ✓
- 2 AFT CROSSTUBES , P/N# D212-664-201 , J/S# 183770 , 183769 ✓
- 3 FWD CROSSTUBES , P/N# D350-748-101 , J/S# 184476 , 184478 , 184479 ✓
- 2 AFT CROSSTUBES , P/N# D350-748-201 , J/S# 184480 , 184483 ✓

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417 REV. 16						OCT 26 2018	 
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923 , DEV. MPO11715 , UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: OCT 26 2018
Name: RAFIK MELIKIAN		



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D4151-043
Job Sheet 184538



Part No: D4151-043

Job Qty: 8 ea

Part Name: Basket Fwd Hardpoint Assembly, Upper



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/11/18

Job Tracking No:

Due Date: 11/9/18

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG REV C SHEET 1 IPP Rev:A 10.06.24 new issue DD verf:EC IPP Rev:B 10.07.22 as per revB DD verf:JLM IPP Rev:C 11.01.21 as per dwg revC DD verf:JLM

Ship Via:

6935

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	8 Ea	11/9/18	11/9/18	0.00	0.00	Start Up Small Fab-3		DEC 08 2018
100	Small Fab	8 pcs	11/9/18	11/9/18	0.00	0.84	Small Fab-6		36
110	QC	8 pcs	11/9/18	11/9/18	0.00	0.00	QC5		DEC 08 2018
120	Packaging	8 pcs	11/9/18	11/9/18	0.00	0.00	Packaging3-2	51083 98	DEC 17 2018
130	QC21-SA	8 Ea	11/9/18	11/9/18	0.00	0.00	QC21		DEC 17 2018

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
AN4C13A	Bolt	16 Ea (2 ea)	90-Start up Operation	5119227
D4151-3	Upper Hardpoint Plate	16 Ea (2 ea)	90-Start up Operation	5107692
D4151-7	Fwd Eyebolt Receiver (Upper)	8 Ea (1 ea)	90-Start up Operation	5133740
MS21043-4	Nut	16 Ea (2 ea)	90-Start up Operation	5192790
NAS1149C0432R	Washer	32 Ea (4 ea)	90-Start up Operation	5103998

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	AN4C13A	16	256	0
	D4151-3	16	53	0
	D4151-7	8	20	0
	MS21043-4	16	859	0
	NAS1149C0432R	32	1,782	0



Container No: S135954



Part: D4151 - 043

Job No: 184538

Serial No/Batch: S135954

Revision:

Inspector:

Exp Date:

Instructions: Various STC's

Date: 12/10/18

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

d.

Plex 12/10/18 7:02 AM dart.quirion.sonia

